

## **REMARKS/ARGUMENTS**

Reconsideration is requested in view of the following remarks. Claim 26 has been editorially revised. Support for the claim revision can be found in paragraph [0003] of the specification. Claims 26-31 remain under consideration in the present application.

### **Claim Rejections – 35 USC §103**

Claims 26-31 are rejected under 35 U.S.C. §103(a) as unpatentable over Corbeil et al. (US Pub. No. 2004/0262526 A1) in view of Mir et al. (US 5,064,684) or Borelli et al. (US 6,796,148). Applicant respectfully traverses this rejection.

Claim 26 is directed to an anisotropic scintillator for use in an imaging system comprising:

a scintillator element comprised of a scintillator material having a first optical property;

a three-dimensional pattern formed in said scintillator element utilizing a pulse laser, said pulse laser altering said first optical property at a plurality of discrete locations in said scintillator element such that said three dimensional pattern is comprised of scintillator material having a second optical property and such that said three dimensional pattern forms localized channel regions in said scintillator element;

wherein said three-dimensional pattern and said complex anisotropic portions are together configured to control the spread of photons to achieve desired signal sharing among the plurality of regions having borders defined by the plurality of discrete locations within said scintillator element, and further wherein said complex anisotropic portions and said three-dimensional pattern are together configured via at least one of a plurality of optical properties to preserve spatial information allowing reliable centroid determination within the anisotropic scintillator.

The rejection asserts that since either of Mir et al. or Borelli et al. disclose making waveguides in ceramic or glass material by using a laser to selectively densify certain discrete portions so irradiated so that the laser treated portions become crystalline in an otherwise non-crystalline material, it would be obvious to one of ordinary skill in the art to modify the scintillator of Corbeil et al. to provide the claimed invention.

The invention of Corbeil et al. is directed only to optical segmentation with characteristics similar to detector arrays and relies on micro-voids to achieve accurate decoding of impinging radiation. Mir et al. and Borrelli et al. each teach only forming a waveguide in which substantially the entire volume of the waveguide consists of a laser modified region. In contradistinction, the claimed invention is directed to optical sharing among a plurality of regions having borders defined by a plurality of discrete locations within a scintillator element.

Use of optical sharing between regions would defeat the purpose of the invention of Corbeil et al. which is optical segmentation to achieve accurate decoding of impinging radiation. Therefore, one skilled in the art would not be motivated to modify the invention of Corbeil et al. by allowing optical sharing between different laser modified regions.

The claimed invention relies on sharing of light between elements and does not guide light down the element without intentionally losing light to neighboring elements. This is different than the invention of Corbeil et al. that guides light down an element without losing light to neighboring elements.

Further, Mir et al. and Borrelli et al. each teach only forming a waveguide in which substantially the entire volume of the waveguide consists of a laser modified region. The claimed invention is directed to optical sharing among a plurality of regions having borders defined by a plurality of laser modified discrete locations within a scintillator element. Mir et al. alone or in combination with Borrelli et al. neither teach or suggest optical sharing among a plurality of regions having borders defined by a plurality of laser modified discrete locations within a scintillator element.

Waveguides are well known in the art as structures having cross-section dimensions on the order of the wavelength of the light being guided, i.e. a few microns to a hundred microns. Waveguides rely on the wave-like nature of light. The claimed invention is not a waveguide, but instead is a scintillator that does not act as a waveguide. Since it is only the ray-like nature of light and not the wave-like nature of light that is important in operation of the claimed invention, the claimed invention relies on optical sharing among a plurality of regions having borders defined by a plurality of laser modified discrete locations within a scintillator element, a feature neither disclosed nor suggested by Corbeil et al. alone or in combination with Mir et al. and Borrelli et al.

In view of the foregoing, there is no good reason why a person skilled in the art would be motivated to modify the invention of Corbeil et al. by allowing optical sharing between different laser modified regions, as recited in claim 26 without improperly using the claimed invention as a template.

Further, there is no teaching or suggestion in any of the references alone, or in combination with the remaining cited references, to provide a structure wherein a three-dimensional pattern and complex anisotropic portions are together configured to control the spread of photons to achieve desired signal sharing among the plurality of regions having borders defined by a plurality of discrete locations within a scintillator element, and further wherein the complex anisotropic portions and the three-dimensional pattern are together configured via at least one of a plurality of optical properties to preserve spatial information allowing reliable centroid determination within an anisotropic scintillator, as recited by claim 26. This claimed structure more accurately preserves spatial information to allow more reliable centroid determination than presently achievable when using known centroid determination techniques such as discussed in paragraph [0003] of the specification.

For at least these reasons, claim 26 is patentable over Corbeil et al. alone or in combination with Mir et al. and Borrelli et al. Claims 27-31 are patentable over Corbeil et al. alone or in combination with Mir et al. and Borrelli et al. through their dependency

from claim 26 that is allowable. Applicant does not concede the correctness of the rejection or the relevance of the cited art as to the remaining claim features.

Favorable reconsideration in the form of a Notice of Allowance is requested. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at (507) 351-4450.

Respectfully submitted,

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March 20, 2009